Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

1.   (Currently amended)   An image pickup system comprising:

noise estimating means for estimating an amount of noise contained in digitized signals from an image pickup element in which a plurality of pixels are arranged, for each pixel or for each specified unit area comprising a plurality of pixels, the estimate being derived from a source independent of pixels used to form an image; and

noise reducing means for reducing the noise contained in the signals on the basis of the amount of noise estimated by the noise estimating means.

Claims 2-14 (Withdrawn)

15.   (Currently amended)   The image pickup system according to claim 1, wherein the noise estimating means comprises:

parameter calculating means for calculating parameters on the basis of at least one type of information selected from among the signal value level of the signals, the temperature of the image pickup element, the gain for the signals and the shutter speed during shooting; and

noise amount calculating means for calculating the estimated amount of noise on the basis of the parameters calculated by the parameter calculating means.

16.   (Currently amended)   The image pickup system according to claim 1, wherein the noise estimating means comprises an upper limit value setting means for setting an upper limit value on the estimated amount of noise.

17.   (Currently amended)   The image pickup system according to claim

1, wherein the noise reducing means comprises:

threshold value setting means for setting ~~the~~ <u>an</u> amplitude value of the noise as a threshold value for each pixel or for each specified unit area comprising a plurality of pixels on the basis of the amount of noise estimated by the noise estimating means; and

smoothing means for ~~reducing~~ <u>excluding</u> the amplitude components in the signals which are below the threshold value set by the threshold value setting means.

18.   (Withdrawn)

19.   (Original)   The image pickup system according to claim 15, wherein the parameter calculating means comprises signal value calculating means for calculating the signal value levels by averaging a plurality of pixel values in a nearby region of a specified size or in the unit area that includes the pixel of interest.

20.   (Withdrawn)

21.   (Original)   The image pickup system according to claim 15, wherein the image pickup element comprises an OB (optical black) region, and the parameter calculating means comprises:

variance calculating means for calculating the variance of the signals in the OB region; and

temperature estimating means for estimating the temperature of the image pickup element on the basis of the variance calculated by the variance calculating means.

22.   (Original)   The image pickup system according to claim 15, wherein the parameter calculating means comprises gain calculating means for determining the gain on the basis of at least one type of information selected among the ISO

sensitivity, exposure information and white balance information.

23.   (Original)   The image pickup system according to claim 15, wherein the parameter calculating means comprises shutter speed calculating means for determining the shutter speed during the shooting from exposure information.

24.   (Currently amended)   ~~Then~~ The image pickup system according to claim 15, wherein the noise amount calculating means calculates the amount of noise N using the signal value level L of the signals, the temperature T of the image pickup element, the gain G for the signals and the shutter speed S during shooting as parameters, and the noise amount calculating means comprises:

coefficient calculating means for calculating four coefficients A, B, C and D on the basis of three functions a(T, G), b(T, G) and c(T, G) using the temperature T and gain G as parameters, and a function d(S) using the shutter speed S as a parameter; and

function calculating means for calculating the amount of noise N on the basis of a functional equation

$$N = (AL^B + C)D$$

defined by the four coefficients A, B, C and D calculated by the coefficient calculating means.

25.   (Original)   The image pickup system according to claim 24, wherein the noise amount calculating means further comprises assigning means for assigning standard parameter values, and the parameters are values calculated by the parameter calculating means, or standard values assigned by the assigning means.

Claims 26-27 (Withdrawn)

28.   (Currently amended)   An image processing program executed in an image pickup system, for performing routines, said program comprising:

a noise estimating routine for estimating an ~~the~~ amount of noise contained in digitized signals from an image pickup element in the image pickup system in which a plurality of pixels are arranged, either for each pixel or for each specified unit area comprising a plurality of pixels;

a threshold value setting routine for setting ~~the~~ an amplitude value of the noise as a threshold value for each pixel or each specified unit area comprising a plurality of pixels on the basis of the amount of noise estimated by the noise estimating routine; and

a smoothing routine for ~~reducing~~ excluding the amplitude components in the signals that are equal to or less than the threshold value set by the threshold value setting routine.

29.   (Withdrawn)

30.   (Currently amended)   An image processing program executed in an image pickup system for performing routines, said program comprising:

a variance calculating routine for calculating ~~the~~ a signal variance in ~~the~~ OB regions of digitized signals from an image pickup element in the image pickup system in which a plurality of pixels are arranged and which has an OB (optical black) region;

a temperature estimating routine for estimating the temperature of the image pickup element on the basis of the variance calculated by the variance calculating routine;

a parameter calculating routine for calculating parameters on the basis of at least one type of information selected from among the temperature of the image pickup element estimated by the temperature estimating routine, ~~the~~ a signal value level of the signals, ~~the~~ a gain for the signals and ~~the~~ a shutter speed during shooting of a shutter in the pickup system;

a noise amount calculating routine for calculating ~~the~~ an amount of noise estimated to be contained in the signals on the basis of the parameters calculated by the parameter calculating routine, either for each pixel or a specified unit area comprising a plurality of pixels; and

a noise reducing routine for reducing the noise in the signals on the basis of the amount of noise calculated by the noise amount calculating routine.

31.   (Currently amended)   An image processing program executed in an image pickup system for performing routines, said program comprising:

a parameter calculating routine for calculating ~~the~~ a signal value level L of digitized signals from an image pickup element in the pickup system in which a plurality of pixels are arranged, ~~the~~ a temperature T of the image pickup element, ~~the~~ a gain G for the signals and ~~the~~ a shutter speed S of a shutter in the pickup system during shooting as parameters;

a coefficient calculating routine for calculating four coefficients A, B, C and D on the basis of three functions a(T, G), b(T, G) and c(T, G) using the temperature T and gain G as parameters, and a function d(S) using the shutter speed S as a parameter;

a function calculating routine for calculating ~~the~~ an amount of noise N estimated to be contained in the signals on the basis of a functional equation

$$N = (AL^B + C)D$$

defined by the four coefficients A, B, C and D calculated by the coefficient calculating routine, either for each pixel or for each specified unit area comprising a plurality of pixels; and

a noise reducing routine for reducing the noise in the signals on the basis of the amount of noise calculated by the function calculating routine.

32.   (Withdrawn)

33. (New) An image pickup system comprising:

a noise estimating unit for estimating an amount of noise contained in digitized signals from an image pickup element in which a plurality of pixels are arranged, for each pixel or for each specified unit area comprising a plurality of pixels, the estimate being derived from a source independent of pixels used to form an image; and

a noise reducing unit for reducing the noise contained in the signals on the basis of the amount of noise estimated by the noise estimating unit.

34. (New) The image pickup system according to claim 33, wherein the noise estimating unit comprises:

a parameter calculating unit for calculating parameters on the basis of at least one type of information selected from among the signal value level of the signals, the temperature of the image pickup element, the gain for the signals and the shutter speed during shooting; and

a noise amount calculating unit for calculating the estimated amount of noise on the basis of the parameters calculated by the parameter calculating unit.

35. (New) The image pickup system according to claim 33, wherein the noise estimating unit comprises an upper limit value setting unit for setting an upper limit value on the estimated amount of noise.

36. (New) The image pickup system according to claim 33, wherein the noise reducing unit comprises:

a threshold value setting unit for setting an amplitude value of the noise as a threshold value for each pixel or for each specified unit area comprising a plurality of pixels on the basis of the amount of noise estimated by the noise estimating unit; and

a smoothing unit for excluding the amplitude components in the

signals which are below the threshold value set by the threshold value setting unit.

37.   (New)   The image pickup system according to claim 34, wherein the parameter calculating unit comprises a signal value calculating unit for calculating the signal value levels by averaging a plurality of pixel values in a nearby region of a specified size or in the unit area that includes the pixel of interest.

38.   (New)   The image pickup system according to claim 34, wherein the image pickup element comprises an OB (optical black) region, and the parameter calculating unit comprises:

a variance calculating unit for calculating the variance of the signals in the OB region; and

a temperature estimating unit for estimating the temperature of the image pickup element on the basis of the variance calculated by the variance calculating unit.

39.   (New)   The image pickup system according to claim 34, wherein the parameter calculating unit comprises a gain calculating unit for determining the gain on the basis of at least one type of information selected among the ISO sensitivity, exposure information and white balance information.

40.   (New)   The image pickup system according to claim 34, wherein the parameter calculating unit further comprises a shutter speed calculating unit for determining the shutter speed during the shooting from exposure information.

41.   (New)   The image pickup system according to claim 34, wherein the noise amount calculating unit calculates the amount of noise N using the signal value level L of the signals, the temperature T of the image pickup element, the gain G for the signals and the shutter speed S during shooting as parameters, and the noise amount calculating unit comprises:

a coefficient calculating unit for calculating four coefficients A, B, C and D on the basis of three functions a(T, G), b(T, G) and c(T, G) using the temperature T and gain G as parameters, and a function d(S) using the shutter speed S as a parameter; and

a function calculating unit for calculating the amount of noise N on the basis of a functional equation

$$N = (AL^B + C)D$$

defined by the four coefficients A, B, C and D calculated by the coefficient calculating unit.

42. (New) The image pickup system according to claim 41, wherein the noise amount calculating unit further comprises an assigning unit for assigning standard parameter values, and the parameters are values calculated by the parameter calculating unit, or standard values assigned by the assigning unit.